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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,259

04/18/2006

Junko Kakegawa

P29770

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7055 7590 05/28/2008  
GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER

LACLAIR, DARCY D

ART UNIT

PAPER NUMBER

4171

NOTIFICATION DATE

DELIVERY MODE

05/28/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,259	<b>Applicant(s)</b> KAKEGAWA, JUNKO	
	<b>Examiner</b> Darcy D. LaClair	<b>Art Unit</b> 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/28/08, 10/10/07, 9/21/06</u> .                              | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 11 is objected to because of the following informalities: The symbol ( $\eta$ ) indicating intrinsic viscosity is not displaying properly. In order for it to be present in the claim language, appropriate correction is required.
2. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19 depends from claim 18, which specifies a sink product or a toilet product. Claim 19 specifies a wash bowl, a hand-wash bowl, a toilet counter. These are not further limiting.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 18 claims a molded article comprising the molded article according to Claim 17. This is confusing and indefinite, as it is unclear to whether the molded article of Claim 18 is the molded article of Claim 17, where the molded article comprises a bath

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product, washroom product, toilet product or sink product, or whether the molded article of Claim 18 is a molded article in into which a previously molded article is inserted.

6. Claim 19 recites the limitation "molded article" according to Claim 18. It goes on to specify that this molded article is a washroom counter, a kitchen counter, a bathtub, a wash bowl, a hand-wash bowl, a toilet counter, or a cabinet counter top. Claim 18 specifies that the molded article is a bath product, washroom product, toilet product, or sink product. This does not present a genus in which the species kitchen counter would be included. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al. (US6,174,943) in view of Houck et al. 2001 (Forensic Science Communications, <http://www.fbi.gov/hq/lab/fsc/backissu/july2001/houck.htm>) and/or Nexant (2002 [http://nexant.ecnext.com/coms2/gi\\_0255-3403/Polytrimethylene-Terephthalate-PTT.html](http://nexant.ecnext.com/coms2/gi_0255-3403/Polytrimethylene-Terephthalate-PTT.html)).

9. Claim 1-2 and 4-6 require

a. a polytrimethylene terephthalate (PTT) reinforced resin composition with 100 parts of resin including 50 to 99.9 parts of PTT,

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- b. 0 to 49.9 parts of thermoplastic resin
- c. 0.1 to 20 parts of epoxy resin, and
- d. 5 to 300 parts of crystalline inorganic filler.

10. Claim 2, 4, and 5 further narrow the range of epoxy, epoxy, and thermoplastic resin, respectively.

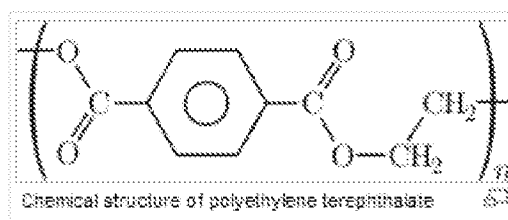
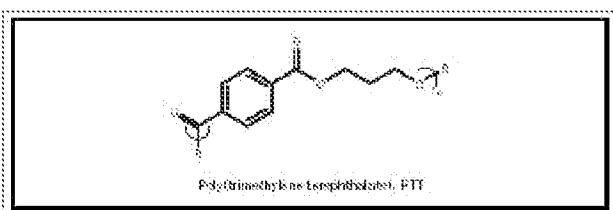
11. Claim 6 indicates that the thermoplastic resin should be polycarbonate.

12. Matsumoto teaches a flame retardant thermoplastic resin comprising polycarbonate and an aromatic polyester resin in a ratio of 99/1 to 50/50 (abstract), an optional epoxy compound from 0.01 to 8 parts by weight (col 13 line 55-65), and a 5-100 parts of a silicate compound (abstract) which is an inorganic crystalline filler (col 6 line 37-53) with an optional inclusion of up to 100 parts of fillers as a reinforcing agent. (col 14 line 3-6, 17-20). Matsumoto teaches that the aromatic polyester resin, present in concentrations from 1 to 50 parts, can be a variety of terephthalates, comparable to applicants PTT from 50 to 99 parts, with polyethylene (PET) and polytetramethylene terephthalate preferred. Matsumoto's polycarbonate, present from 99 to 50 parts, meets applicant's requirement for thermoplastic resin, as well as claim 6. The epoxy compound, present from 0.1 to 8 parts in Matsumoto's disclosure, substantially overlaps applicant's claimed range of 0.1 to 20 parts. Matsumoto's 1-100 parts of inorganic crystalline filler overlaps a substantial portion of applicants range of 5 to 300 parts of crystalline inorganic filler.

13. Matsumoto teaches a range from 1 to 50 parts of the terephthalate while applicant teaches 50 to 99 parts, with the other major component of both (a

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thermoplastic resin, here polycarbonate) 50-99 parts for Matsumoto and 1-50 parts for applicant. While these ranges adjoin, they do not overlap. In addition, Matsumoto enumerates a variety of alternate phthalate components, but is silent with respect to the possibility of exchanging polytrimethylene terephthalate (PTT) for PET.



14. PTT is chemically similar to PET. Both Houck and Nexant describe PTT as a known product which has become more commercially available recently due to improved production methods.

PTT was first patented in 1941, but was not considered a marketable product until a low cost route to high-quality PDO could be developed, which has now been accomplished by Shell Chemical.

(Nexant)

PTT is described as similar to but with several improved properties with respect to PET:

1. PTT has an odd number (three) of methylene units between each of the terephthalates, whereas PBT and PET have even numbers of methylene units. The odd number of methylene units affects the physical and chemical structure of PTT, giving it elastic recovery beyond that of PBT or PET and into the range of nylon (Chuah et al. 1995B; Table 1). PTT is also dyeable without a carrier at boiling temperatures under atmospheric conditions because of the open molecular structure, providing colorfastness comparable to nylon with select dyes (Werny 1998). PTT allows for additional tonal shades with pressure dyeing (Anton 2000), giving designers more choices (Houck)

This suggests that it would be obvious, given the improved properties and the more cost effective availability as of 2002 (Nexant) to exchange PTT for PET to gain the benefit of the improved mechanical properties. Additionally, since the intended end use would be

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in a visible molded device, the improved dyeability would be a highly desirable property. As to the composition, it is obvious to those of ordinary skill in the art that the ratio of two components can be altered in a linear fashion to achieve a desired set of properties, based on the properties of the two components in question. Because of the improved physical properties and greater elastic recovery of PTT, it would be especially obvious to alter the compositional ratio of the terephthalate (here PTT) to the thermoplastic resin (here polycarbonate) to achieve an optimized set of mechanical properties.

15. Claim 3 and 10 require a part of the resin components grafted on the crystalline inorganic filler and on the glass fiber. Matsumoto teaches that the preferred inorganic silicate fillers (analogous to applicant's crystalline inorganic fillers) may be surface treated to raise the adhesion to the resins using a silane coupling agent having epoxy groups, (col 6, line 58-59, col 7 line 46-53) which would constitute a portion of the epoxy resin component. Matsumoto also teaches that the inorganic reinforcing fillers may be treated with epoxy coupling agents in a similar manner (col 14 line 9-13)

16. Claim 7-8 enumerate the required inorganic fillers for applicant's invention. Matsumoto teaches talc, mica, wollastonite, kaolin, (col 6 line 44-46) calcium carbonate fiber, and the like (col 14 line 2-9).

17. Claim 9 requires a glass fiber in an amount less than the inorganic filler. Matsumoto teaches an optional glass fiber (col 14 line 3) usable in an amount less than 100 parts, preferably 50 or 10 parts (col 14 line 17-20), relative to 0.5 to 100 parts of the silicate compound (col 7 line 57-60). In addition, the glass fiber (col 14 line 3) is an inorganic reinforcing fiber that may be used alone or in admixture of other reinforcing

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filters, which would reduce the weight composition of the glass fibers below the weight composition of the inorganic filler. This completely covers a range where the amount of glass fiber is less than the amount of the crystalline filler.

18. Claim 11 requires that the PTT has an intrinsic viscosity of 0.60 or more.

Matsumoto teaches that it is preferable for the aromatic polyester resin (which is preferably polyethylene or polymethylene terephthalate) to have an intrinsic viscosity of 0.3 to 2.00 dl/g, but most preferable to have an intrinsic viscosity of 0.50 to 1.60 dl/g.

(col 6 line 0-5)

19. Claim 12 and 13 require the epoxy resin to be a novolac epoxy, with an epoxy equivalent from 150 to 250 (/eq), respectively. Claim 14 and 15 require the resin to be a bisphenol A epoxy resin with an epoxy equivalent from 600 to 3,000 (/eq). Matsumoto teaches that the epoxy compound may be selected from a wide range of epoxy compounds, where bisphenol A and novolac type epoxy compounds are preferred, and may be used alone or in admixture. Matsumoto teaches that the epoxy compounds preferably have an epoxy equivalent from 50 to 3,000 and more preferably from 80 to 1000. (col 13 line 6-65) This completely encompasses applicant's ranges for both bisphenol A and novolac type epoxies.

20. Claim 16 is a product by process claim which describes melt-kneading the components as described in claim 1, in the order resins then inorganic filler. Matsumoto teaches that the method of preparing the composition is not particularly limited, which suggests that similar results would be achieved regardless of the method used to generate the filter. Matsumoto further describes melt-kneading, and a method of



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incorporating ingredients to the middle of the melt kneader as necessary. (col 14 line 51-59) This suggests that any order of addition would be available by Matsumoto's teaching.

21. Claim 17 requires a molded article of the resin described in claim 1. Matsumoto teaches that the method of the molding process is not particularly limited and methods of molding known in the art are used and available. (col 14 line 60-64) This indicates that Matsumoto has generated molded articles. Additionally, Matsumoto describes the preparation of molded test subjects in the examples.

22. Claim 20 requires that the molded article of Claim 17 has a Barcol hardness of 30 or more. Matsumoto is silent with regard to the Barcol hardness, however the excellent surface properties and mechanical strength of the invention is presented. (col 26 line 45-52) For both the inventive resin as well as Matsumoto's resin, the composition and processing are significantly similar that they would yield products of similar physical properties. A Barcol hardness of 30 or more would be an inherent property of Matsumoto's invention. The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness." *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). See also *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983). See MPEP § 2112 [R-3]

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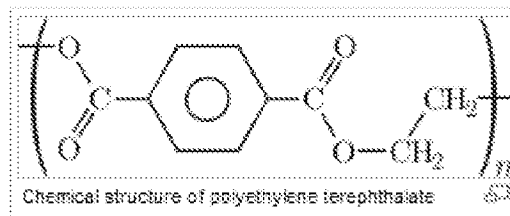
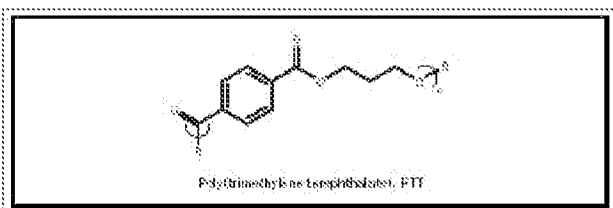
23. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al. (US6,174,943) further in view of Watanabe et al. (US 6,447,913)

24. Claim 18 and 19 describe the articles which may be made from applicant's resin, substantially those which are bath, kitchen, or counter molded products. Matsumoto teaches that the thermoplastic resin can be suitably used as moldings for household electric appliances, office automation equipment parts, audio-visual equipment parts, automobile parts, and the like due to its excellent heat and solvent resistance, as well as its mechanical strength and dimensional stability. (col 26 line 45-52) Matsumoto is silent with regard to the use of this resin to generate a bath, counter, and kitchen product. Watanabe is clear that engineering plastics are used for a variety of purposes, such as cars and electrical/electronic apparatuses, (col 1 line 20-25) which overlaps with the uses described by Matsumoto. Watanabe goes on to indicate that some parts may be used in places frequently splashed with toilet and bath detergents and bleaches, and therefore require not only excellent mechanical properties but also excellent solvent resistance. (col 1 line 27-33) This would substantially apply to bath, kitchen, and counter products. The resin of Matsumoto's invention would be ideal for use in these applications due to its properties. Because the two inventions overlap in scope, and both would be known to those of ordinary skill in the art, it would be obvious for Matsumoto to consider use of the resin in alternate applications to which it was suited, such as bath, counter, and kitchen products.

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25. Claims 1-7, 11, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano et al. (US 5,302,645), further in view of Houck and/or Nexant.

26. With regard to Claim 1-2 and 4-5 and 14-15, Nakano teaches a polyethylene terephthalate composition comprising 100 parts by weight of PET, 1 to 25 parts by weight of a bisphenol type epoxy resin having an epoxy equivalent of 1000 or less, 5 to 50 parts by weight of a thermoplastic resin containing at least one carboxyl group, and 5 to 150 parts by weight of a glass fiber. (abstract) While Nakano is silent with respect to the possibility of exchanging polytrimethylene terephthalate for PET, there are enumerated a variety of other kinds of copolymerization components which may be included, (col 2 line 15-33) which allows for slight alterations in the formula. PTT is chemically similar to PET.



27. Both Houck and Nexant describe PTT as known product which has become more commercially available recently due to improved production methods.

PTT was first patented in 1941, but was not considered a marketable product until a low cost route to high-quality PDO could be developed, which has now been accomplished by Shell Chemical.

(Nexant)

PTT is described as similar to but with several improved properties with respect to PET:

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1. PTT has an odd number (three) of methylene units between each of the terephthalates, whereas PBT and PET have even numbers of methylene units. The odd number of methylene units affects the physical and chemical structure of PTT, giving it elastic recovery beyond that of PBT or PET and into the range of nylon (Chuah et al. 1995B; Table 1). PTT is also dyeable without a carrier at boiling temperatures under atmospheric conditions because of the open molecular structure, providing colorfastness comparable to nylon with select dyes (Werny 1998). PTT allows for additional tonal shades with pressure dyeing (Anton 2000), giving designers more choices (Houck)

This suggests that it would be obvious to exchange PTT for PET to gain the benefit of the improved mechanical properties. Additionally, since the intended end use would be in a visible molded device, the improved dyeability would be a highly desirable property.

28. With regard to Claim 3, Nakano teaches that the glass fiber may be treated with a bundling agent (polyvinyl acetate and polyester) prior to incorporation. (col 3 line 42-46)

29. With regard to Claim 6, Nakano teaches that the thermoplastic resin may be and is preferably polycarbonate. (col 2 line 67- col 3 line 2)

30. With regard to Claim 7, Nakano teaches that an inorganic filler such as calcium carbonate, silica, talc, mica, and potassium titanate may be incorporated. (col 4 line 43-45)

31. With regard to Claim 11, Nakano teaches the desirability of an intrinsic viscosity of 0.4 to 1.2 dl/g, preferably 0.6 to 0.8 dl/g, which substantially covers applicant's range. (col 2 line 33-45)

32. With regard to Claim 16, Nakano teaches that the composition may be prepared by conventional mixer and kneader, and the mixture would be melted and kneaded by an extruder. Nakano further specifies that the glass fiber and other components may be

added to the middle of the extruder. This indicates that the inorganic components are being added as a second step as described by applicant. (col 4 line 26-36)

33. With regard to Claim 17, Nakano describes that the composition can be molded easily according to conventional molding methods. This demonstrates that Nakano has created molded objects of the inventive composition.

### ***Information Disclosure Statement***

An 18 page document submitted on 2/28/08 which appears to be a machine translation was submitted without any identification as to patent number or source of document. It is unclear whether this is one of the identified translations (47-3444 or 11-100516) or another document completely. This document was reviewed but is not formally acknowledged until such time as it is properly identified. A copy of said document is included in this packet for your convenience.

### ***Conclusion***

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

35. Kawamura et al. (US 4,222,928) teaches a novel polyester composition which includes 100 parts by weight of an aromatic polyester which can be a terephthalate, 5 to 150 parts of a flat glass flake which may be up to 50% replaced by an inorganic solid, 0.01 to 10% of an epoxy compound, and 0.5 to 50% of a rubbery elastomer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darcy D. LaClair whose telephone number is (571)270-5462. The examiner can normally be reached on Monday-Thursday 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 4171

Darcy D. LaClair  
Examiner  
Art Unit 4171

/DDL/